

## **Abstract**

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A kind of variable engine valve control system with pressure difference comprises hydraulic supply equipment, hydraulic actuator apparatus, valve and spring controlling piston balance. The hydraulic actuator comprises hydraulic cylinder, piston and piston rod. The piston rod is coupled and moved with the valve. It is characterized by that the said piston divides the 10 hydraulic cylinder into upper chamber and lower chamber. The said hydraulic supply equipment is connected with the upper chamber of the hydraulic cylinder through the fluid inlet pipe and the said lower chamber of the hydraulic cylinder is connected with the hydraulic supply equipment through the pressure difference proportional relief valve. Utilizing pressure difference proportional relief valve as key control element, the height of 15 the valve opening is not related to the pressure of the system, it only needs to change electric signal to vary the pressure difference of the upper and lower chambers of the piston thereby attain the object of making variable valve lift and timing at any time as required. Therefore, the system has fast response speed, simple structure, low cost, fine reliability, and less interference. Consequently, this invention can meet the requirement of higher 20 operating speed of internal combustion engines. It can be popularized and applied in internal combustion engines.